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THE ECONOMICS OF WILD RICE FARMING IN NORTHERN SASKATCHEWAN

(A Theoretical Break-even Analysis)

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I. INTRODUCTION:

The foregoing presentation is an attempt to provide a theoretical economic analysis of wild rice production in northern Saskatchewan.

Unlike other agricultural enterprises, wild rice farming involves production practices that are beyond the control of producers and are therefore not easily quantified. As such, the economic analysis is not as clear-cut as the other farming enterprises.

In this study, the harvester, which is a major component in wild rice farming, is used as the basis of the economic analysis.

It should be understood that this exercise is for the purpose of determining the break-even cost of production only and is never meant to determine the economic size of a family farm.

II. ASSUMPTIONS:

1. Size of operation = One Harvester Unit.
2. Area required = 110 Acres (minimum).
3. Production per acre = 144 Pounds (minimum).
4. Computation of harvester operation:
   - 4.1 Operating speed = 10 M.P.H. (52,600 f.p.h.).
   - 4.2 Width of harvest table = 8 Feet (minimum).
   - 4.3 Average effective harvesting time per 10 hours-day operation (4 hours downtime). = 6 Hours.
   - 4.4 Minimum number of harvesting per acre = 8 Times (passes).
   - 4.5 Average quantity of rice harvested per pass = 18 Pounds.

4.6 Computation of area:

4.6.1 Area (acres) harvested per hour

$$= \frac{\text{speed x width of table}}{\text{one acre (square feet)}}$$

$$= \frac{52{,}600 \times 8}{43{,}560}$$

Area Harvested Per Hour	=	9.66 Acres/Hour

4.6.2 Area Covered In Six (6) Hours = 58 Acres

4.6.3 Area needed to maximize use of one (1) harvester (harvesting is repeated generally every second or third day during the duration of the harvest season. = 116 Acres

Assume Maximum Area for One Harvester	=	110 Acres

5. Computation for Break-even Analysis:

5.1 Capital Outlay

ITEMS	COST (Estimates)	TERMS OF PAYMENT (Years)	RATE (%)	INTEREST			TOTAL YEARLY AMORTIZATION (Capital & Interest)		
				1	2	3	1	2	3
5.1.1 Mechanical Harvester	7,000	3	13	910	606	303	3,244	2,940	2,637
5.1.2 Trailer	800	3	13	104	69	35	371	336	302
5.1.3 Outboard motor and boat (20 H.P. and 16 foot boat)	3,500	3	13	455	303	151	1,622	1,470	1,318
5.1.4 Seeder	350	3	13	45	30	15	162	147	132
5.1.5 Seeds (25 pounds/ acre at $1.75/ pound for 110 acres)	4,810	3	13	625	417	208	2,228	2,020	1,811
TOTAL	16,460			2,139	1,425	712	7,627	6,913	6,200

5.2 Operating Costs

ITEMS	COST (YEARLY)
A. Care of Crops	
1) Labour for seeding, clearing inspection, etc. at $7.00 per hour for 75 hours.	$ 525.00
2) Fuel, oil, for outboard motor, etc. (75 hours at $2.00/hour)	150.00
B. Harvesting Operation	
1) Bags (300 at $0.70 each)	210.00
2) Fuel, oil, etc. (160 hours of operation)	400.00
3) Labour ($10.00/hour for operator and $6.00/hour for helper for 160 hours)	2,560.00
4) Handling, transport, etc. (At an average of $0.05/lb. for 15,840 lbs.)	792.00
5) Maintenance, repairs, parts, etc. (for harvester and outboard motor)	500.00
C. Miscellaneous (10% of cost of operation which is $5,137.00).	514.00
D. Interest expense on total operating costs which is $5,651.00 at 13% for six months.	367.00
TOTAL	$6,018.00

NOTE: A yearly inflation rate on operating costs of three per cent is projected for the next four years.

5.3 Depreciation (straight line)

ITEMS	LIFE (YEARS)	AMOUNT DEPRECIATED (YEARLY)
A. Harvester ($7,000.00)	5	$1,400.00
B. Trailer ($800.00)	5	160.00
C. Outboard motor and boat ($3,500.00)	5	700.00
D. Seeder ($350.00)	5	70.00
TOTAL		$2,330.00

5.4 Royalty costs (payment to government of $0.05/pound for 15,840 pounds) = $792.00

5.5 Summary of Yearly Costs:

TYPE OF OPERATION	COSTS (YEARLY)				
	1	2	3	4	5
5.5.1 Amortization on loan plus interest charges	7,627	6,913	6,200	ø	ø
5.5.2 Cost of operation	6,018	6,198	6,383	6,574	6,771
5.5.3 Depreciation	2,330	2,330	2,330	2,330	2,330
5.5.4 Royalty payment to government	792	792	792	792	792
TOTAL	16,767	16,233	15,705	9,696	9,893

5.6 Break-even = $\frac{\text{Total yearly cost}}{\text{Total yearly production}}$

First year = $\frac{16,767}{15,840}$ = \$1.06/pound

Second year = $\frac{16,233}{15,840}$ = \$1.02/pound

Third year = $\frac{15,705}{15,840}$ = \$0.99/pound

Fourth year = $\frac{9,696}{15,840}$ = \$0.61/pound

Fifth year = $\frac{9,893}{15,840}$ = \$0.62/pound

5.7 Average Break-even Cost (5 years) = \$0.86/pound.

5.8 A reduction in capital costs, such as the cost of mechanical harvester, interest rate, etc. will subsequently result in the reduction of the break-even cost.

5.9 Any increase in production per acre over the assumed average (144 lbs.), as in the 1984 crop year (170 lbs.) will automatically result in the reduction of the break-even cost.

5.10 Even if rice is sold at break-even cost, the grower has already benefited from the business by accumulated investment in capital equipment such as the harvester, boat and seeder. If the grower is involved in the operation - as most of them are, he is already in a position to earn extra income through his paid labour.

6. Projected Net Income (before taxes)

6.1 At 144 pounds per acre for 110 acres. (15,840 pounds)

6.2 At $1.50 per pound (green rice).

YEAR	NET INCOME PER POUND ($)	NET INCOME PER YEAR (ONE HARVESTER UNIT OPERATION)
1	0.44	$ 6,970.00
2	0.48	7,600.00
3	0.51	8,078.00
4	0.89	14,100.00
5	0.88	13,940.00

6.3 Any increase in price, such as in crop year 1984 ($1.75/lb.), will automatically increase net income per pound, and subsequently per unit area of operation, which in this analysis is 110 acres.